

# Executive Summary

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Mandan-Bismarck Corridor Improvement Study

*Mandan and Bismarck, North Dakota*  
July 19, 2016

# Mandan-Bismarck Corridor Improvement Study: Executive Summary

## Introduction

This document summarizes the results of the Mandan-Bismarck Corridor Improvement Study Final Report. The Bismarck-Mandan Metropolitan Planning Organization (MPO), the City of Mandan, and the City of Bismarck requested a transportation planning study be developed to evaluate 20 total corridors and a possible truck route within the Mandan and Bismarck city limits. Project oversight was provided by the North Dakota Department of Transportation (NDDOT), Federal Highway Administration (FHWA), and the Federal Transit Administration (FTA). The corridors selected for this project were selected by the MPO and project entities.

## Objective

The corridors included in this study provide mobility for high volumes of traffic daily and are vital for connecting major activity centers. This transportation study evaluates the selected corridors and develops low-cost alternatives for each that will address both safety and operational concerns to help them function as the arterial roadways they are intended to be. The objective of the study was to develop low-cost solutions to aid in improving traffic operations, as well as enhancing safety by reducing crashes along each selected corridor.

A secondary objective was to determine the need for a truck route in the City of Mandan to alleviate heavy vehicle traffic along Main Street/Business I-94 between ND Highway 25 to Twin City Drive.

The corridors selected by the Bismarck-Mandan MPO to be included within the study for the City of Bismarck include the following Figure ES-1:

- Washington Street (Calgary Avenue to Divide Avenue)
- Divide Avenue (Schafer Street to Bismarck Expressway/ND Highway 810)
- 4<sup>th</sup> Street (Century Avenue to Boulevard Avenue)
- 7<sup>th</sup> Street (Boulevard Avenue to Rosser Avenue)
- 9<sup>th</sup> Street (Boulevard Avenue to Rosser Avenue)
- Front Avenue/Memorial Highway (Main Avenue to 12<sup>th</sup> Street)
- 26<sup>th</sup> Street (Divide Avenue to Airway Avenue)
- 19<sup>th</sup> Street (Divide Avenue to LaSalle Drive)
- Ward Road (Edwards Avenue to Divide Avenue)

The corridors selected for the City of Mandan include the following Figure ES-2:

- Main Street /Business I-94 (ND Highway 25 to Twin City Drive)
- Sunset Drive/6<sup>th</sup> Avenue NW (Main Street to Oil Red Trail)
- ND Highway 6 (Main Street to 19<sup>th</sup> Street NW)
- Old Red Trail (Mandan Avenue to Sunset Drive)
- Mandan Avenue/ND Highway 1806 (Main Street to Old Red Trail)
- 3<sup>rd</sup> Street (ND Highway 6 to Memorial Highway)

- 19<sup>th</sup> Street (ND Highway 6 to ND Highway 1806)
- Collins Avenue (Main Street to Old Red Trail)
- ND Highway 1806 North (Old Red Trail to 38<sup>th</sup> Street)
- ND Highway 1806 South (Main Street to 19<sup>th</sup> Street)
- Division Street (Sunset Avenue to 8<sup>th</sup> Avenue NE)

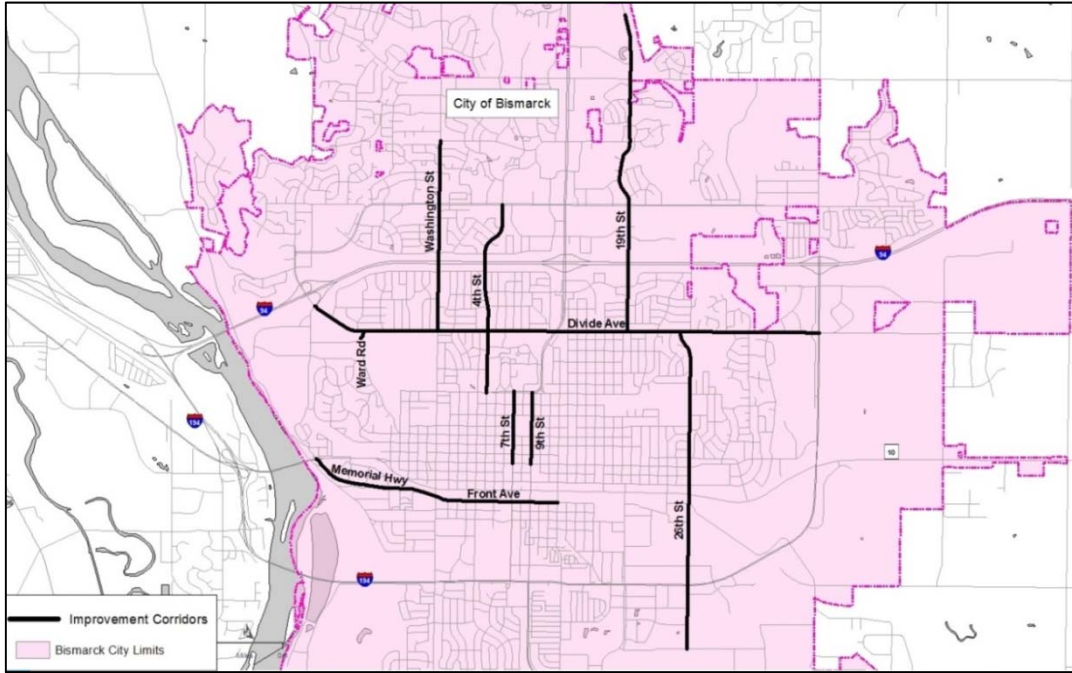


Figure ES-1. Bismarck Improvement Corridors

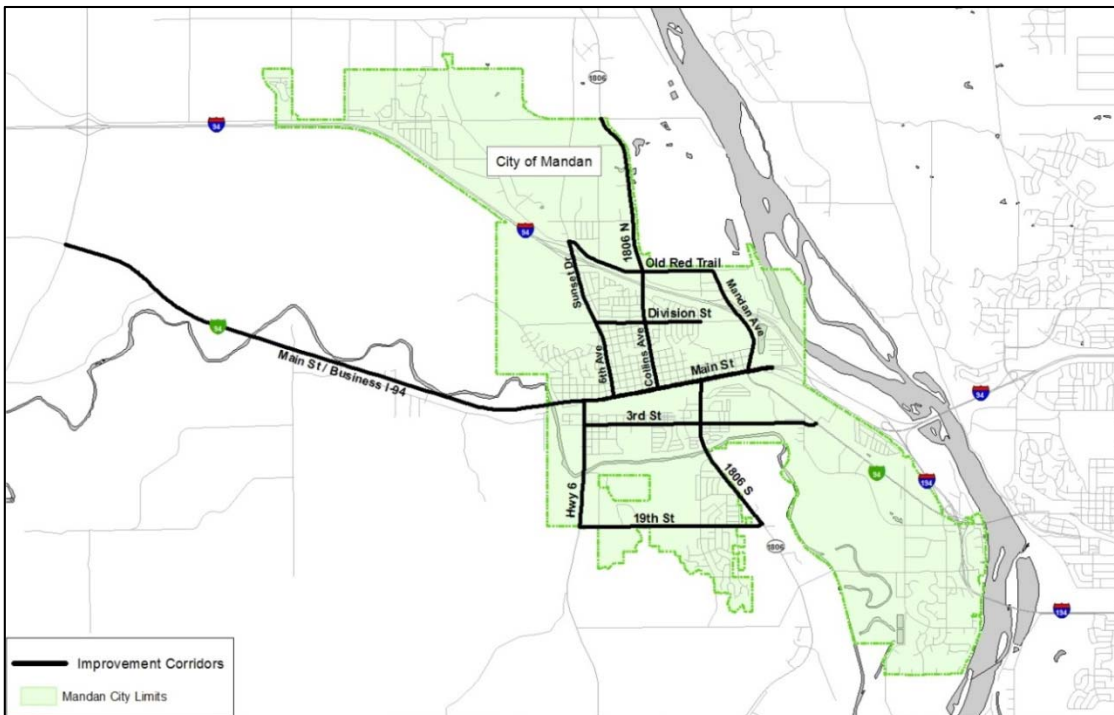


Figure ES-2. Mandan Improvement Corridors

## Methodology

### Existing 2014 Traffic Operations

The existing traffic operations of the corridors were analyzed using a planning-level Level of Service (LOS) approach based on the ARTPLAN analysis program within the Highway Capacity Manual (HCM). Using this methodology, characteristics such as daily traffic volumes, signal timings, and basic roadway geometry at major intersections were taken into account and used as inputs to generate generalized peak hour estimates of traffic operations for each corridor.

A safety analysis was also conducted using NDDOT provided crash data for the calendar years of 2012, 2013, and 2014. The data provided by NDDOT contained crash report information that allowed crashes to be categorized based on characteristics such as location, manner of collision, and severity. This information was used to identify which intersections or roadway segments within the study area experienced the most crashes, and what types of crashes occurred.

### Forecasted 2040 Traffic Operations (No-Build)

The traffic growth rates were forecasted for corridor segments by evaluating outputs from the Bismarck-Mandan MPO travel demand model. The year 2014 ADT volumes were used as the baseline data source for the analysis and forecasts. The modeled growth rates were prorated to a rate reflecting growth as a 30-year trend from the model to the year 2040.

Using the constraints of the existing infrastructure, also referred to as the No-Build Alternative, the forecasted 2040 traffic volumes were applied to determine the estimated 2040 LOS for each corridor segment located within the Bismarck-Mandan study area. The 2040 LOS results are provided in Figure ES-3.

Comparing the 2014 and 2040 LOS results, there is no variance for Mandan but several corridors in Bismarck are projected to see deterioration in Level of Service by the year 2040. Divide Avenue from Schafer Street to Washington Street will decrease from LOS A to LOS F. 4<sup>th</sup> Street from Interstate Avenue to Divide Avenue will decrease from LOS C to LOS D. 7<sup>th</sup> Street from Boulevard Avenue to Rosser Avenue will decrease from LOS E to LOS F. Finally, Front Avenue from 3<sup>rd</sup> Street to 7<sup>th</sup> Street will decrease from LOS E to LOS F.

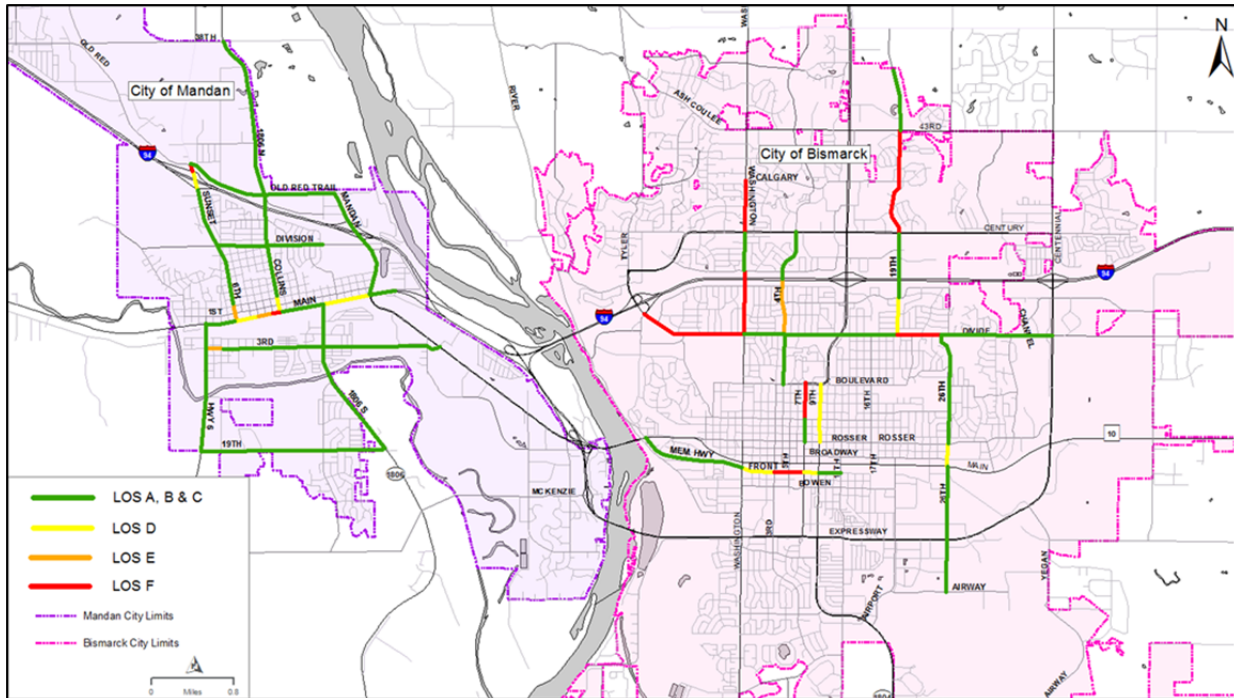


Figure ES-3. 2040 Forecasted LOS

### Mandan Safety Analysis

There were a total of 259 intersection crashes and 183 segment crashes that occurred on the City of Mandan study corridors between 2012, 2013 and 2014.

The intersections that experienced the highest number of injury-related crashes were the intersections of Main Street and ND 1806 S, and the intersection of ND 1806 S and Burlington Street SE.

The roadway segment that experienced the most injury-related crashes was Main Street between Highway 6 and Twin City Drive, with one fatality and three non-incapacitating injury crashes being reported during the study period. Main Street between ND Hwy 6 and Twin City Drive. experienced the highest frequency of angle crashes in comparison with other corridors, comprising approximately 33% of its total crashes. 3<sup>rd</sup> Street and Hwy 1806 S experienced the highest total rear-end crashes.

### Bismarck Safety Analysis

There were a total of 524 reported intersection crashes and 716 reported segment crashes occurring on Bismarck corridors between the years of 2012, 2013 and 2014. There were no reported fatalities during the study period for any of the Bismarck corridors.

The Bismarck intersection with the highest intersection crash rate was identified as Front Avenue and 3<sup>rd</sup> Street. The intersection of 4<sup>th</sup> Street and Century Avenue had the second highest crash rate and the intersection of Front Avenue and 9<sup>th</sup> Street had the third highest crash rate. The intersection with the highest injury crash rate was identified as 7<sup>th</sup> Street and Rosser Avenue.

Divide Ave was found to not only have the highest number of total segment crashes (186 crashes), but it experienced the highest total of head-on collisions (4 crashes) and non-collision with motor vehicle crashes (19 crashes) as well. Washington Street, 9<sup>th</sup> Street, and Divide Avenue experienced the highest total crashes resulting in injury. 9<sup>th</sup> Street and 7<sup>th</sup> Street were found to have the highest segment crash rates for corridors studied within the City of Bismarck. Memorial Highway/ Front Street was found to have the third highest segment crash rate.

### **Mandan Truck Route**

To determine existing truck patterns on Main Street through central Mandan, three different sources of data were used to assess truck flows, focusing primarily on through-movements. These sources were:

- A StreetLight commercial vehicle flow dataset, purchased from StreetLight Data, Inc.
- Assessing current corridor truck patterns based on NDDOT truck counts from various locations within the corridor.
- Conducting interviews with major trucking companies and locations that generate truck traffic in and around Mandan to understand truck travel patterns.

Evaluating the data from the aforementioned sources it was concluded that although Main Street is the most direct route for many truck trips in Mandan, a route south of Main Street would provide the most direct option for an alternate truck route. An aggregate pit and asphalt plant located west of Mandan accounts for approximately 66% of the truck traffic along Main Street. Based upon conversations with the aggregate pit owner, the aggregate pit will be relocated in the near future due to lack of available natural resources within the area. The asphalt plant will also be relocated in the near future to the Twin City Industrial Site in East Mandan.

### **Development of Alternatives**

The alternatives presented in this report are intended for long-term planning purposes only, not for design. Prior to implementation, a field review should be done to examine existing roadway widths and a more detailed analysis conducted to determine the necessary lane widths for proposed typical sections. Parking will also need to be evaluated in more detail prior to alternative implementation.

## **Recommended Alternatives**

The LOS of each corridor was re-evaluated with the proposed mitigation characteristics applied to help measure the effectiveness of each alternative. Keep in mind that certain improvements, namely those that are safety related (i.e. improving lighting, signing, pedestrian crossing, etc.) may not have a direct improvement on LOS but are desirable because they enhance driver awareness and safety.

### **Mandan Corridor Alternatives**

The following list provides the proposed alternatives for each corridor within the study areas of Mandan. A no-build alternative is proposed for certain segments where forecasted traffic is

expected to function at acceptable levels or where future changes are constrained by existing parameters.

#### **MAIN STREET (ND HWY 25 TO TWIN CITY DRIVE)**

Recommended Alternative:

- No-build between Hwy 25 and 10th Avenue NW (Hwy 6)
- Install 3-lane section between 10th Avenue NW and 3rd Avenue NE
  - Maintain on-street parking on north side, except for areas near intersection where a few stalls will be eliminated to incorporate extended right-turn lane.
  - Add on-street parking on the south side
  - Lengthen right-turn lane at major intersections
- Coordinate all traffic signals and add protected left turn phasing at all signalized intersections
- Re-stripe all crosswalks and improve all crosswalks
- Install Pedestrian Hybrid Beacon, (HAWK beacon) at un-signalized intersections, if warranted
- Add advanced pedestrian crossing signage at the intersections of 2nd Avenue NW and 4th Avenue NW

The anticipated construction cost of the recommended alternative is approximately \$910,000. This cost includes approximately \$780,000 for HAWK beacons if warranted.

#### **SUNSET DRIVE / 6<sup>TH</sup> AVENUE (MAIN STREET TO OLD RED TRAIL)**

Recommended Alternative:

- No-build between Main Street and North ramp terminal of the I-94/Sunset Drive Interchange
- Intersection of Sunset Drive and Old Red Trail
  - Install a dedicated right turn lane for northbound to eastbound traffic on Sunset Drive
  - Remove island on the west approach of Old Red Trail, and remove the channelized right-turn lane
  - Narrow the through lane for the southbound traffic immediately south of the intersection
  - Add clear advanced signage for drivers on the westbound I-94 off-ramp
- South ramp terminal of the I-94/Sunset Drive Interchange Install signal control on channelized right turn on eastbound-to-southbound approach
- Coordinate timing of signals at the I-94 westbound and eastbound ramp terminals with the signal at Old Red Trail

The anticipated construction cost of the recommended alternative is approximately \$180,000.

#### **ND HIGHWAY 6 (19<sup>TH</sup> STREET TO MAIN STREET)**

Recommended Alternative:

- No-build between 19<sup>th</sup> Street and Main Street
- Intersection of ND Hwy 6 and 19<sup>th</sup> Street
  - Install a southbound left turn lane and a northbound right turn lane (Currently under development and includes intersection lighting)
  - Install advance intersection signing

The anticipated construction cost of the recommended alternative is approximately \$235,000.

**OLD RED TRAIL (MANDAN AVENUE TO SUNSET DRIVE)**

Recommended Alternative:

- No-build between Mandan Avenue and Sunset Drive
- Intersection of Old Red Trail and Mandan Avenue
  - Flatten horizontal curve
  - Add advance intersection signing
  - Consolidate Tesoro access to one approach as a radial “T” intersection
  - Provide left and right turn lanes

The anticipated construction cost of the recommended alternative is approximately \$700,000.

**MANDAN AVENUE (MAIN STREET TO OLD RED TRAIL)**

Recommended Alternative:

- No-build between Main Street and Old Red Trail
- Intersection of Mandan Avenue and Main Street
  - Update and restripe the pavement markings on intersection approaches
  - Add lane extension skips through the intersection to help drivers navigate
  - Add overhead lane designation signs on mast arms of traffic signal

The anticipated construction cost of the recommended alternative is approximately \$13,000.

**3<sup>RD</sup> STREET (ND HWY 6 TO MEMORIAL HWY)**

Recommended Alternative:

- No-build between ND Hwy 6 and Memorial Highway
- Intersection of 3<sup>rd</sup> Street and 9<sup>th</sup> Avenue
  - Replace 4-way stop with 2-way stop
  - Add Pedestrian Signing
  - Install Pedestrian Hybrid Beacon, (HAWK beacon)
- Intersection of 3<sup>rd</sup> Street and 8<sup>th</sup> Avenue
  - Replace 4-way stop with 2-way stop
  - Add Pedestrian Signing
  - Install Pedestrian Hybrid Beacon, (HAWK beacon)
- Intersection of 3<sup>rd</sup> Street and Memorial Highway
  - Add curb and gutter or guardrail along radius to prevent erosion and enhance safety of turning vehicles

The anticipated construction cost of the recommended alternative is approximately \$264,000.

**19<sup>TH</sup> STREET (ND HWY 6 TO ND HWY 1806)**

Recommended Alternative:

- Extend the existing urban section from Ridge Drive to ND HWY 6 with a 3-lane section
  - No on-street parking
- Extend the existing urban section from 14<sup>th</sup> Avenue SE to ND Hwy 1806 with a 3-lane section
  - No on-street parking



- Provide turn lanes to all major intersections between Ridge Drive and ND Hwy 6
- 3-lane section between Ridge Drive and 14th Avenue SE
  - No on-street parking

The anticipated construction cost of the recommended alternative is approximately \$3,411,000.

**COLLINS AVENUE (MAIN STREET TO OLD RED TRAIL)**

Recommended Alternative:

- No-build between Main Street and Old Red Trail
- Intersection of Collins Avenue and 5<sup>th</sup> Street NE Improve sight distance by offsetting retaining walls at the 5<sup>th</sup> Street NE, 7<sup>th</sup> Street NE and Division Street intersections
- Intersection of Collins Avenue and 14th Street
  - Replace 4-way stop with a 2-way stop
  - Signalize if warranted
- Intersection of Collins Avenue and Old Red Trail
  - Because of the proposed Starion Sports Complex intersection improvements may be needed
    - Install traffic signal and left turn lanes in all quadrants or Install a roundabout.

The anticipated construction cost of the recommended alternative is approximately \$390,000.

**HIGHWAY 1806 N (38<sup>TH</sup> STREET TO OLD RED TRAIL)**

Recommended Alternative:

- No-build between Old Red Trail and 38<sup>th</sup> Street
- Intersection of ND Hwy 1806 N and 27<sup>th</sup> Street NW
  - Installation of left turn lane on northbound ND 1806 N at the intersection of 27<sup>th</sup> Street
  - Installation of right turn lane on southbound ND 1806 at the intersection of 27<sup>th</sup> Street
  - Provide right/left turn lanes on the eastbound minor approach 27<sup>th</sup> Street at intersection with ND 1806 N
  - Install a Pedestrian Hybrid Beacon (HAWK beacon) at the pedestrian crossing, if warranted

The anticipated construction cost of the recommended alternative is approximately \$322,000.

**HIGHWAY 1806 S (MAIN STREET TO 19<sup>TH</sup> STREET SE)**

Recommended Alternative:

- 3-lane section between 3<sup>rd</sup> Street SE to Main Street
  - No on-street parking
- Intersection of ND Hwy 1806 S and 3<sup>rd</sup> Street SE
  - Extend curb and gutter around radius to control access into the gas station
  - Line up left turn lane offsets on the east and west approaches
  - Utilize the boulevard on the east approach between the curb and sidewalk to improve intersection lane geometry without eliminating on-street parking

- Intersection of ND Hwy 1806 S and Burlington Street
  - Add a pedestrian crossing and sidewalk along the east side of ND 1806 S (6th Avenue SE)
  - Install traffic signal if warranted
  - If signal not warranted install a Pedestrian Hybrid Beacon (HAWK beacon) at the pedestrian crossing
  - Install left turn lane on ND 1806 S on the south approach and right turn lane on north approach for vehicles turning onto Burlington Street
- Just south of the intersection of 3<sup>rd</sup> Street and ND 1806 S, the southbound through movement quickly merges from two through lanes to one with very little transition.
  - Use one lane as a right turn lane on the north approach and drop it at the intersection. Therefore only one lane is carried through the intersection and eliminates the need for merging
  - Incorporate a dedicated left turn lane
- No-build between 3<sup>rd</sup> Street SE and 19<sup>th</sup> Street SE

The anticipated construction cost of the recommended alternative is approximately \$405,000.

#### **DIVISION STREET (SUNSET AVENUE TO 8<sup>TH</sup> AVE NE)**

Recommended Alternative:

- No –build between Sunset Drive and 8<sup>th</sup> Avenue NE
- At the intersection of Sunset Drive and Division Street:
  - Restripe stop bar on Division Street closer to perpendicular travel lane on Sunset Drive to increase sight distance on approach
  - Maintain roadside vegetation and prune trees as necessary to provide adequate sight distance for drivers on Division Street approach
- At the intersection of Division Street and 6<sup>th</sup> Avenue:
  - Eliminate yield and stop control for Division Street approaches and allow for free through movement. Make 6<sup>th</sup> Avenue approaches stop controlled
- At the intersection of Division Street and Collins Avenue:
  - As previously mentioned, offset retaining wall further from roadway to provide increased sight distance for drivers on east Division Street approach

The anticipated construction cost of the recommended alternative is approximately \$13,700.

#### **MANDAN TRUCK ROUTE**

With a significant reduction of truck traffic on Main Street imminent due to the relocation of the aggregate pit and asphalt plant west of Mandan, and the high cost of improving an alternative route for a small number of trucks we recommend the no-build alternative.

#### **Bismarck Corridor Alternatives**

The following list provides the proposed alternatives for each corridor within the study areas of Bismarck. A no-build alternative is proposed for certain segments where forecasted traffic is expected to function at acceptable levels or where future changes are constrained by existing parameters.

### **WASHINGTON STREET (DIVIDE AVENUE TO CALGARY AVENUE)**

Recommended Alternative:

- 3-lane section from Divide Avenue to Calgary Avenue
  - No on street parking
- Reduce the number of driveways (vehicle access points) from Washington Street to the Northbrook Tesoro Gas Station at Central Avenue
- Washington Street & Century Avenue Intersection
  - Re-align the Century Avenue left turn lanes to remove negative offsets
  - Install Flashing Yellows (FYA) on all approaches
  - Relocate light poles
- Improve coordination of traffic signals between Interstate Avenue and Turnpike Avenue

The anticipated construction cost of the recommended alternative is approximately \$253,000.

### **DIVIDE AVENUE (SHAFER STREET TO BISMARCK EXPRESSWAY)**

Recommended Alternative:

- 3-lane section from Shafer Street to 26<sup>th</sup> Street. (This recommendation is consistent with the NDDOT Local Safety Plan recommendation)
  - No on street parking
  - Keep bike lanes from Shafer Street to Washington Street and State Street to 26<sup>th</sup> Street
  - Enhance visibility of bike lane pavement markings
  - Keep share the road signage from Washington Street to State Street
- Divide Avenue & Washington Street Intersection
  - Increase curb radius in each quadrant
- Divide Avenue & 4<sup>th</sup> Street Intersection
  - Increase length of Divide Avenue left turn lanes
  - Install Flashing Yellows (FYA) on all approaches

The anticipated construction cost of the recommended alternative is approximately \$136,000.

### **4<sup>TH</sup> STREET (BOULEVARD AVENUE TO CENTURY AVENUE)**

Recommended Alternative:

- 3-lane section from Boulevard Avenue to Century Avenue (This recommendation is consistent with the NDDOT Local Safety Plan recommendation)
  - No on street parking
  - Improve street lighting from Interstate Avenue to Century Avenue
- 4<sup>th</sup> Street & Century Avenue Intersection
  - Re-align the Century Avenue left turn lanes to remove negative offsets
  - Install Flashing Yellows (FYA) on all approaches
  - Relocate light poles
- Divide Ave. & 4<sup>th</sup> Street Intersection
  - Increase length of Divide Avenue left turn lanes
  - Install Flashing Yellows (FYA) on all approaches
- Coordinate traffic signals along Boulevard Avenue between 3<sup>rd</sup> Street and 7<sup>th</sup> Street

The anticipated construction cost of the recommended alternative is approximately \$370,000.

**7<sup>TH</sup> STREET (BOULEVARD AVENUE TO ROSSER AVENUE)**

Recommended Alternative:

- Install 3 through lanes from Boulevard Avenue to Rosser Avenue
  - No parking on west side
- Improve lighting along 7th Street corridor, especially in the school zone at Bismarck High School
- Move stop bars further back from crosswalks.
- Install “Stop Here for Pedestrian” signing to get vehicles to stop further away from crosswalks.
- Add and improve signing and pavement marking to all pedestrian crossings to increase visibility

The anticipated construction cost of the recommended alternative is approximately \$98,000.

**9<sup>TH</sup> STREET (BOULEVARD AVENUE TO ROSSER AVENUE)**

Recommended Alternative:

- Install 3 through lanes from Rosser Avenue to Boulevard Avenue
  - No parking on east side
- Improve lighting along 9th Street corridor, especially in the school zone at Bismarck High School
- Move stop bars further back from crosswalks.
- Install “Stop Here for Pedestrian” signing to get vehicles to stop further away from crosswalks
- Add and improve signing and pavement markings to all pedestrian crossings to increase visibility

The anticipated construction cost of the recommended alternative is approximately \$96,000.

**FRONT AVE/MEMORIAL HIGHWAY (MAIN AVENUE TO 12<sup>TH</sup> STREET)**

Recommended Alternative:

- No build between Main Avenue and Washington Street
- 3-lane section from Washington Street to 12<sup>th</sup> Street (This recommendation is consistent with the NDDOT Local Safety Plan recommendation)
  - No on street parking
- Front Street & 3<sup>rd</sup> Street Intersection
  - Install Flashing Yellows (FYA) on all approaches
- Eliminate 2 accesses from strip mall north of Front Street near Washington Street

The anticipated construction cost of the recommended alternative is approximately \$72,600.

**26<sup>TH</sup> STREET (AIRWAY AVENUE TO DIVIDE AVENUE)**

Recommended Alternative:

- No build between Airway Avenue and Main Avenue

- 3-lane section from Main Ave. to Ave D.
  - No on street parking from Thayer Ave. to Ave D.
- No build between Ave D. and Divide Ave.

The anticipated construction cost of the recommended alternative is approximately \$24,000.

#### **19<sup>TH</sup> STREET (DIVIDE AVENUE TO LASALLE DRIVE)**

Recommended Alternative:

- 3-lane section from Divide Avenue to Capitol Avenue
  - No on street parking
- Between Capitol Avenue to Century Avenue, extend 3-lane section further south to accommodate turn lane at Basin Electric
- 3-lane section from Century Avenue to LaSalle Drive (This recommendation is consistent with the NDDOT Local Safety Plan recommendation)
  - Eliminate on street parking
- Between Yucca Avenue to 43<sup>rd</sup> Avenue
  - Extend urban from where it ends south of Yucca Drive to 43<sup>rd</sup> Avenue and strip as a 3 lane section with no parking
  - Re-align the 19<sup>th</sup> Street south approach to line up with the 19<sup>th</sup> Street north approach
  - Provide left turn lane and a right/through lane on south approach

The anticipated construction cost of the recommended alternative is approximately \$780,000.

#### **WARD ROAD (DIVIDE AVENUE TO EDWARDS AVENUE)**

Recommended Alternative:

- Realignment of Ward Road and College Drive

The anticipated construction cost of the recommended alternative is approximately \$354,000.

## **Conclusions**

Based on the safety analysis and the existing and forecasted LOS results, various recommended alternatives were developed for each corridor within the study area. Some alternatives focus more on traffic operations and efficiency, while others are meant to mitigate safety concerns and crashes. Project stakeholders were included in the development of the preliminary alternatives and provided helpful insight. Utilizing various aspects of each of the proposed recommendation will be beneficial in improving traffic operations along each corridor and will also improve the overall safety at major intersections by reducing either the frequency of crashes or severity of crashes. Ultimately, these recommendations are intended to assist the corridors in functioning as the high-volume, high-mobility arterial roadways they should be.

## **Implementation**

Evaluation of LOS, social impacts, comparison between advantages and disadvantages, cost comparisons, as well as overall construction feasibility were all considered in recommending a low-cost alternative. Prioritization should be given to alternatives that improve safety and driver

understanding relating to signing, striping, signalization, and improving visibility and line of sight at intersections.

It is recommended that a more thorough evaluation be conducted as a separate study before the future implementation of any of the proposed alternatives. This further analysis should include any site-specific traffic volumes and turning movement counts, signalization timings, and should also take into consideration details regarding existing utilities and nearby landowners as relevant to the proposed alternative project location.

### **Prioritization**

Lists prioritizing the corridors for each city are provided below. These lists may be used as a guideline when deciding which corridor should be studied further for alternative implementation as funds are made available. The prioritization ranking is based on forecasted 2040 LOS as well as the segment and intersection crash rates associated with each corridor and its major intersections.

The Bismarck corridors are listed in order of highest priority (1) to lowest priority (9) below:

1. 9<sup>th</sup> Street (Boulevard Avenue to Rosser Avenue)
2. 7<sup>th</sup> Street (Boulevard Avenue to Rosser Avenue)
3. Washington Street (Calgary Avenue to Divide Avenue)
4. Front Avenue/Memorial Highway (Main Avenue to 12<sup>th</sup> Street)
5. Divide Avenue (Schafer Street to Bismarck Expressway/ND Highway 810)
6. 19<sup>th</sup> Street (Divide Avenue to LaSalle Drive)
7. 26<sup>th</sup> Street (Divide Avenue to Airway Avenue)
8. 4<sup>th</sup> Street (Century Avenue to Boulevard Avenue)
9. Ward Road (Edwards Avenue to Divide Avenue)

The Mandan corridors are listed in order of highest priority (1) to lowest priority (11) below:

1. Main Street /Business I-94 (ND Highway 25 to Twin City Drive)
2. Collins Avenue (Main Street to Oil Red Trail)
3. 3<sup>rd</sup> Street (ND Highway 6 to Memorial Highway)
4. Sunset Drive/6<sup>th</sup> Avenue NW (Main Street to Oil Red Trail)
5. ND Highway 1806 South (Main Street to 19<sup>th</sup> Street)
6. ND Highway 6 (Main Street to 19<sup>th</sup> Street NW)
7. Old Red Trail (Mandan Avenue to Sunset Drive)
8. Mandan Avenue/ND Highway 1806 (Main Street to Old Red Trail)
9. ND Highway 1806 North (Old Red Trail to 38<sup>th</sup> Street)
10. 19<sup>th</sup> Street (ND Highway 6 to ND Highway 1806)
11. Division Street (Sunset Avenue to 8<sup>th</sup> Avenue NE)